Standards and Best Practices related to the Publication, Exchange, and Usage of Open Data

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ASIS&T 2017

https://www.asist.org/about/board/committees/standards-committee/

Standards Committee

The Standards Committee shall advise the Board of Directors and shall represent the Association's interest in matters pertaining to standards. It shall actively identify potential new standards needed by the information community and shall take the necessary steps to initiate development of such needed standards with the appropriate organizations. The Chair, after consultation with the full committee, may vote or comment in accordance with the majority opinion of the committee in the name of the Association on all proposed standards submitted by organizations with which the Association affiliates. All such action and comment must be promptly reported to the Board of Directors; actions and comments proposed should be reported to the board in advance whenever possible.

Co-Chair: Mark Needleman
Co-Chair: Timothy Dickey
Board Liaison: Fidelia Ibekwe-SanJuan, IRSIC – Aix-Marseille University

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Last updated
10/19/2017

Casted votes 43 times

Standards Committee Activities 2017

Standards Committee

Standards Committee Activities 2017

Standards Committee Activities 2016

Standards Committee Activities 2015

Standards Committee Activities 2014

Standards Committee Activities 2013

Standards Committee Activities 2012

Standards Committee Activities 2010-2011

Last updated 10/19/2017

1. Voted **YES** N921, NWIP, Guidelines for Bibliographic reference citations to information

   Question:

   Do you approve, disapprove, or abstain on this NWIP (New Wo Proposal – ISO TC 46-SC 9, N921, Guidelines for Bibliographic and citations to information resources?

   Description:

   This International Standard gives guidelines for the preparatio bibliographic references. It also gives guidelines for the prepar citations in Latin scripts in works that are not themselves prim bibliographical. It is applicable to bibliographic references and to all kinds of information resources, including but not limited t monographs, serials, contributions, patents, cartographic mate electronic information resources (including research datasets, computer software and social media), music, recorded sound, photographs, graphic and audiovisual works, and moving imag applicable to machine-parsable citations. It is also not applica citations, which have their own standards.

42. Voted **APPROVE** on ISO TC 46/SC 4, ISO/FDIS 18626 (Ed 2)– Information and documentation, Interlibrary loan transactions

    Question:

    Do you approve the technical content of the final draft?

    Description:

    This document specifies the transactions between libraries or libraries and other agencies to handle requests for library items and the following exchange of messages.

43. Voted **YES** on TC46/SC9 Ballot on the withdrawal of ISO/NP 15707, Information and documentation – International Standard Musical Work Code (ISWC)

    Question:

    Based on this recommendation, should TC46/SC9 withdraw the project to revise ISO 15707 and disband TC46/SC9/WG2?

    Description:

Standards and Best Practices related to the Publication, Exchange, and Usage of Open Data

- *Data On The Web*
- *Image-based Resources*

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PUBLISHING AND SHARING DATA ON THE WEB

The openness and flexibility of the Web have created

- new opportunities &
- new challenges

Data publishers and data consumers may be unknown to each other.

How to represent, describe, and make data available (by publishers) in a way that it will be easily found, understood, used and re-used (by consumers)?

Are there standards and best practices?

data publishers
data consumers

http://reusabledata.org/logo-circle.png

THE IMPORTANCE OF FOLLOWING THE BEST PRACTICES

Providing some information about the datasets and distributions will contribute to trustworthiness and reuse of:

- structural metadata,
- descriptive metadata,
- access information,
- data quality information,
- provenance information,
- license information, and
- usage information.

data publishers
data consumers

http://reusabledata.org/logo-circle.png

1. *Data On The Web Best Practices*
W3C Recommendation 31 January 2017

- -- Best Practices related to the publication and usage of data on the Web designed to help support a self-sustaining ecosystem.

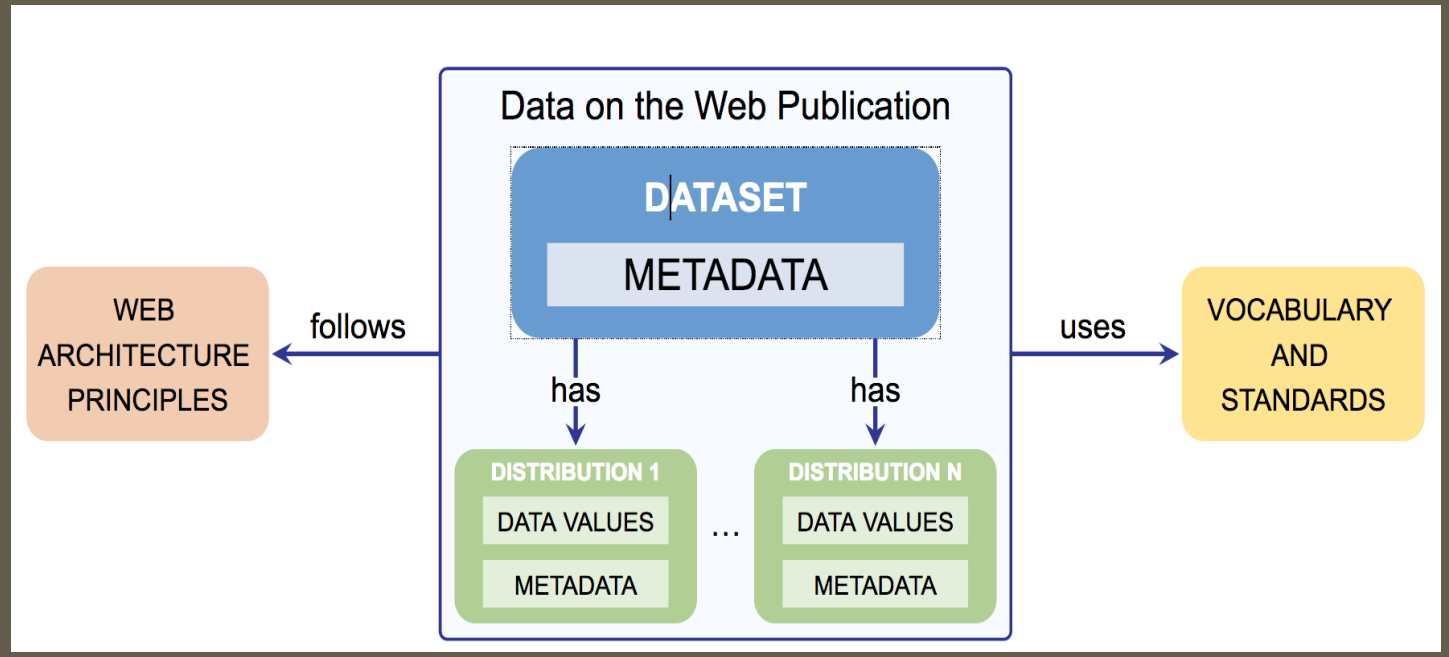


Image source: https://www.w3.org/TR/dwbp/

The Best Practices

Running Example
Metadata
Data Licenses
Data Provenance
Data Quality
Data Versioning
Data Identifiers
Data Formats
Data Vocabularies
Data Access
    Data Access APIs
Data Preservation
Feedback
Data Enrichment
Republication

W3C Recommendation

6. Best Practices Template

This section presents the template used to describe Data on the Web Best Practices.

Best Practice Template

Short description of the BP

Why

This section answers two crucial questions:

- Why this is specifically relevant to publishing or reusing data on the Web?
- How does this encourage publication or reuse of data on the Web?

A full text description of the problem addressed by the Best Practice may also be provided. It can be any length but is likely to be no more than a few sentences.

Intended Outcome

What it should be possible to do when a data publisher follows the Best Practice.

Possible Approach to Implementation

A description of a possible implementation strategy is provided. This represents the best advice available at the time of writing but specific circumstances and future developments may mean that alternative implementation methods are more appropriate to achieve the intended outcome.

How to Test

Information on how to test the BP has been met. This might or might not be machine testable.

Evidence

Information about the relevance of the BP. It is described by one or more relevant requirements as documented in the Data on the Web Best Practices Use Cases & Requirements document [DWBP-UCR]

Benefits

A benefit represents an improvement in the way how datasets are available on the Web. A Best Practice can have one or more benefits.

Benchmarks

- Reuse
- Comprehension
- Linkability
- Discoverability
- Trustiness
- Accessibility
- Interoperability
- Processability

Benefits that data publishers will gain with adoption of the Best Practices

REUSE

All Best Practices

ACCESS

- Provide bulk download
- Provide Subsets for Large Datasets
- Use content negotiation for serving data available in multiple formats
- Provide real-time access
- Provide data up to date
- Make data available through an API
- Use Web Standards as the foundation of APIs
- Provide Complementary Presentations

PROCESSABILITY

- Provide metadata
- Provide structural metadata
- Use machine-readable standardized data formats
- Provide data in multiple formats
- Reuse vocabularies, preferably standardized ones
- Provide Subsets for Large Datasets
- Make data available through an API
- Use Web Standards as the foundation of APIs
- Enrich data by generating new data

INTEROPERABILITY

- Use persistent URIs as identifiers of datasets
- Use persistent URIs as identifiers within datasets
- Reuse vocabularies, preferably standardized ones
- Choose the right formalization level
- Make data available through an API
- Use Web Standards as the foundation of APIs
- Avoid Breaking Changes to Your API
- Provide Feedback to the Original Publisher

https://www.w3.org/TR/dwbp/

(cont.)
Benefits that data publishers will gain with adoption of the Best Practices

[redacted]

DISCOVERABILITY

- Provide metadata
- Provide descriptive metadata
- Use persistent URIs as identifiers of datasets
- Use persistent URIs as identifiers within datasets
- Assign URIs to dataset versions and series
- Use Web Standards as the foundation of APIs
- Cite the Original Publication

TRUST

- Provide data license information
- Provide data provenance information
- Provide data quality information
- Provide a version indicator
- Provide version history
- Assign URIs to dataset versions and series
- Reuse vocabularies, preferably standardized ones
- Provide an explanation for data that is not available
- Provide complete documentation for your API
- Avoid Breaking Changes to Your API
- Preserve identifiers
- Assess dataset coverage
- Gather feedback from data consumers
- Make feedback available
- Enrich data by generating new data
- Provide Complementary Presentations
- Provide Feedback to the Original Publisher
- Follow Licensing Terms
- Cite the Original Publication

LINKABILITY

- Use persistent URIs as identifiers of datasets
- Use persistent URIs as identifiers within datasets
- Provide Subsets for Large Datasets
- Use Web Standards as the foundation of APIs

COMPREHENSION

- Provide metadata
- Provide descriptive metadata
- Provide structural metadata
- Provide data provenance information
- Use locale-neutral data representations
- Reuse vocabularies, preferably standardized ones
- Choose the right formalization level
- Gather feedback from data consumers
- Enrich data by generating new data
- Provide Complementary Presentations

https://www.w3.org/TR/dwbp/

For each best practice, the component could include:

Best Practice 1: Provide metadata

Provide metadata for both human users and computer applications.

Why

Providing metadata is a fundamental requirement when publishing data on the Web because data publishers and data consumers may be unknown to each other. Then, it is essential to provide information that helps human users and computer applications to understand the data as well as other important aspects that describes a dataset or a distribution.

Intended Outcome

Humans will be able to understand the metadata and computer applications, notably user agents, will be able to process it.

Possible Approach to Implementation

Possible approaches to provide *human-readable metadata:*

- to provide metadata as part of an HTML Web page
- to provide metadata as a separate text file

https://www.w3.org/TR/dwbp/#ProvideMetadata

EXAMPLE 1

Human-readable

Example page with a human-readable description of an available dataset.

Machine-readable

Example file with a machine-readable description of an available dataset.

How to Test

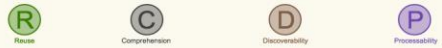
Check if human-readable metadata is available.

Check if the metadata is available in a valid machine-readable format and without syntax error.

Evidence

Relevant requirements: R-MetadataAvailable, R-MetadataDocum, R-MetadataMachineRead

Benefits



Possible approaches to provide *machine-readable metadata:*

- machine-readable metadata may be provided in a serialization format such as Turtle and JSON, or it can be embedded in the HTML page using [HTML-RDFA] or [JSON-LD]. If multiple formats are published separately, they should be served from the same URL using content negotiation and made available under separate URIs, distinguished by filename extension. Maintenance of multiple formats is best achieved by generating each available format on the fly based on a single source of the metadata.
- when defining machine-readable metadata, reusing existing standard terms and popular vocabularies are strongly recommended. For example, Dublin Core Metadata (DCMI) terms [DCTERMS] and Data Catalog Vocabulary [VOCAB-DCAT] can be used to provide descriptive metadata. Such vocabularies are designed to be very flexible so it is often helpful to use a specific *profile* of a vocabulary such as the European Commission's DCAT-AP

https://www.w3.org/TR/dwbp/

2. WEB ANNOTATION

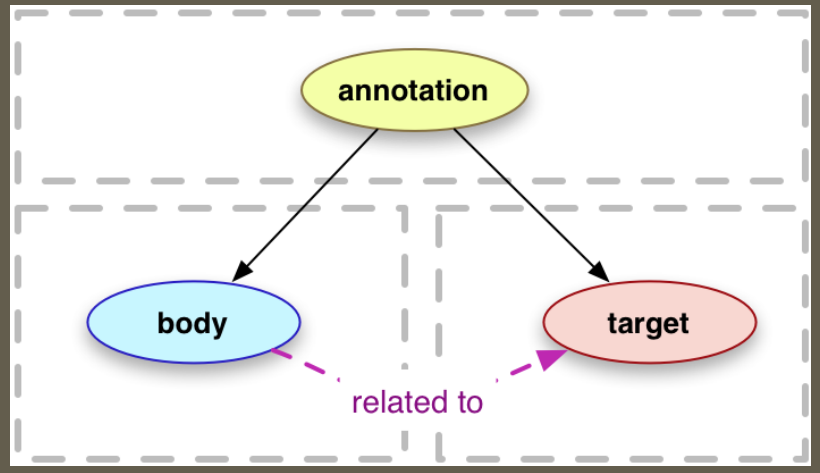
Annotations are typically used to convey information about a resource or associations between resources.

Simple examples include *a comment or tag* on a single web page or image, or *a blog post* about a news article.

Web Annotation Data Model

- W3C Recommendation 23 February 2017

-- a structured model and format to enable annotations to be shared and reused across different hardware and software platforms.



https://www.w3.org/TR/annotation-model/

Web Annotation Vocabulary

- W3C Recommendation 23 February 2017
- -- specifies the set of RDF classes, predicates and named entities that are used by the *Web Annotation Data Model*.

Web Annotation Protocol

- W3C Recommendation 23 February 2017
- -- The Protocol describes the transport mechanisms for creating and managing annotations in a method that is consistent with the *Web Architecture* and *REST* best practices.

Web Annotation Data Model

//www.w3.org/TR/annotation-model/

W3C Recommendation

TABLE OF CONTENTS

3.3.5 Motivation and Purpose

In many cases it is important to understand the reasons why the Annotation was created, or why the Textual Body was included in the Annotation, not just the times and agents involved. These reasons are provided by declaring the motivation for the Annotation's creation or the purpose for the inclusion of the Textual Body in the Annotation; the "why" rather than the "who" and "when" described in the previous sections.

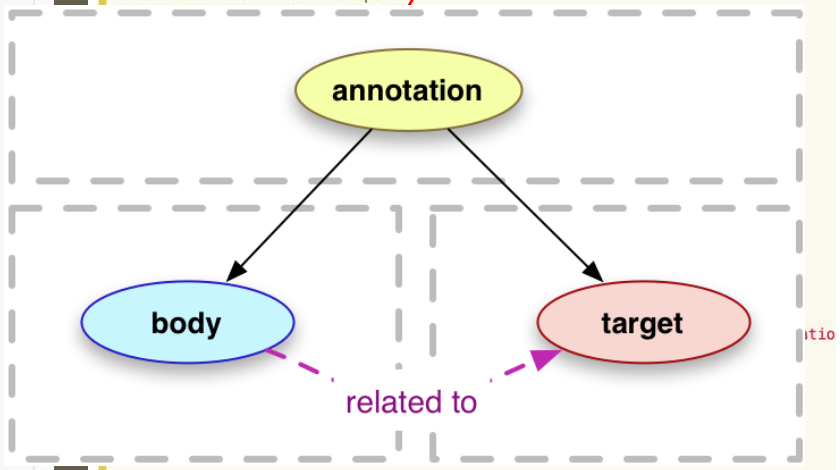
Example Use Case: Noelle annotates a resource intending to bookmark it for future reference, and provides a description and a tag to make it easier to find again. Her client adds the right motivations to the Annotation and the Textual Body resources to capture this.

Model

Term	Type	Description
motivation	Relationship	The relationship between an Annotation and a Motivation. There should be exactly 1 `motivation` for each Annotation, and than 1.
purpose	Relationship	The reason for the inclusion of the Textual Body within the Annot There may be 0 or more `purpose`s associated with a `TextualBo`
Motivation	Class	The Motivation for an Annotation is a reason for its creation, and things like Replying to another annotation, Commenting on a res to a related resource.

Example

EXAMPLE 15: Motivation and Purpose



		Motivations
assessing	Instance	The motivation for when the user intends to assess the target resource in some way, rather than simply make a comment about it. For example to write a review or assessment of a book, assess the quality of a dataset, or provide an assessment of a student's work.
bookmarking	Instance	The motivation for when the user intends to create a bookmark to the Target or part thereof. For example an Annotation that bookmarks the point in a text where the reader finished reading.
classifying	Instance	The motivation for when the user intends to classify the Target as something. For example to classify an image as a portrait.
commenting	Instance	The motivation for when the user intends to comment about the Target. For example to provide a commentary about a particular PDF document.
describing	Instance	The motivation for when the user intends to describe the Target, as opposed to (for example) a comment about it. For example describing the above PDF's contents, rather than commenting on their accuracy.
editing	Instance	The motivation for when the user intends to request a change or edit to the Target resource. For example an Annotation that requests a typo to be corrected.
highlighting	Instance	The motivation for when the user intends to highlight the Target resource or segment of it. For example to draw attention to the selected text that the annotator disagrees with.
identifying	Instance	The motivation for when the user intends to assign an identity to the Target. For example to associate the IRI that identifies a city with a mention of the city in a web page.
linking	Instance	The motivation for when the user intends to link to a resource related to the Target.
moderating	Instance	The motivation for when the user intends to assign some value or quality to the Target. For example annotating an Annotation to moderate it up in a trust network or threaded discussion.
questioning	Instance	The motivation for when the user intends to ask a question about the Target. For example to ask for assistance with a particular section of text, or question its veracity.
replying	Instance	The motivation for when the user intends to reply to a previous statement, either an Annotation or another resource. For example providing the assistance requested in the above.
tagging	Instance	The motivation for when the user intends to associate a tag with the Target.

3. OTHER NOTABLE W3C RECOMMENDATIONS

3.1 Webmention

- W3C Recommendation 12 January 2017
- -- a simple way to notify any URL when you mention it on your site.
- -- From the receiver's perspective, it's a way to request notifications when other sites mention it.

3.2 Micropub

- W3C *Proposed Recommendation* 13 April 2017
- -- the protocol is used to create, update and delete posts on one's own domain using third-party clients.
- -- Web apps and native apps (e.g., iPhone, Android) can use Micropub to post and edit articles, short notes, comments, likes, photos, events or other kinds of posts on your own website.

(CONT.) 3. OTHER NOTABLE RECOMMENDATIONS

3.3 Linked Data Notifications

W3C Recommendation 2 May 2017

- -- a protocol that describes
  - how servers (receivers) can have messages pushed to them by applications (senders),
  - how other applications (consumers) may retrieve those messages.
- Any resource can advertise a receiving endpoint (Inbox) for the messages.
  - Messages are expressed in RDF, and can contain any data.

3.4 Subresource Integrity

W3C Recommendation 23 June 2016

- -- a mechanism by which user agents may verify that a fetched resource has been delivered without unexpected manipulation.

4. International Image Interoperability Framework (IIIF)

http://iiif.io/

The following slides are based on:

- Sanderson, Rob (2015) “Introduction to the Presentation API” http://www.slideshare.net/azaroth42/iiif-presentation-api; “Introduction to IIIF” http://www.slideshare.net/azaroth42/introduction-to-iiif ;
- Warner, Simeon (2015) “IIIF Introduction and Opportunities at Cornell” http://www.slideshare.net/simeonwarner/2015-01-cornellvrwgiiif ;
- Robson, Glen (2017) “Introduction to Annotation, Content Search, and IIIF Authentication from the IIIF Conference - The Vatican” https://www.slideshare.net/GlenRobson/introduction-to-annotation-content-search-and-iiif-authentication-from-the-iiif-conference-the-vatican
- Cramer, Tom (2017) “03 Introduction to IIIF” https://www.youtube.com/watch?v=EE1YskDrzPs
- IIIF Website specifications & showcases and https://www.youtube.com/channel/UClcQIkLdYra7ZnOmMJnC5OA

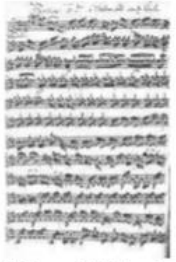
International Image Interoperability Framework

Image-based Resources


Books


Manuscripts

Newspapers


(Sheet) Music


Art / Vis. Resources


Archival Materials


Maps


STEM Imagery


Scrolls


Architecture

IIIF Vision

Create a global framework by which image-based resources (images, books, maps, scrolls, manuscripts, musical scores, etc.)

...from **any** participating institution can be delivered in a standard way

...via **any** compatible image server

...for display, manipulation and annotation in **any** application,

...to **any** user on the Web.

IIIF APIs

http://iiif.io/technical-details.html

API= application programming interface, a set of routines, protocols, and tools for building software applications.

1. Image API

Get images via a simple, RESTful, web service.

Support for tiles needed for pan-zoom viewers.

2. Presentation API

Just enough metadata to drive a remote viewing experience.

(e.g. sequence, labels, attribution, license)

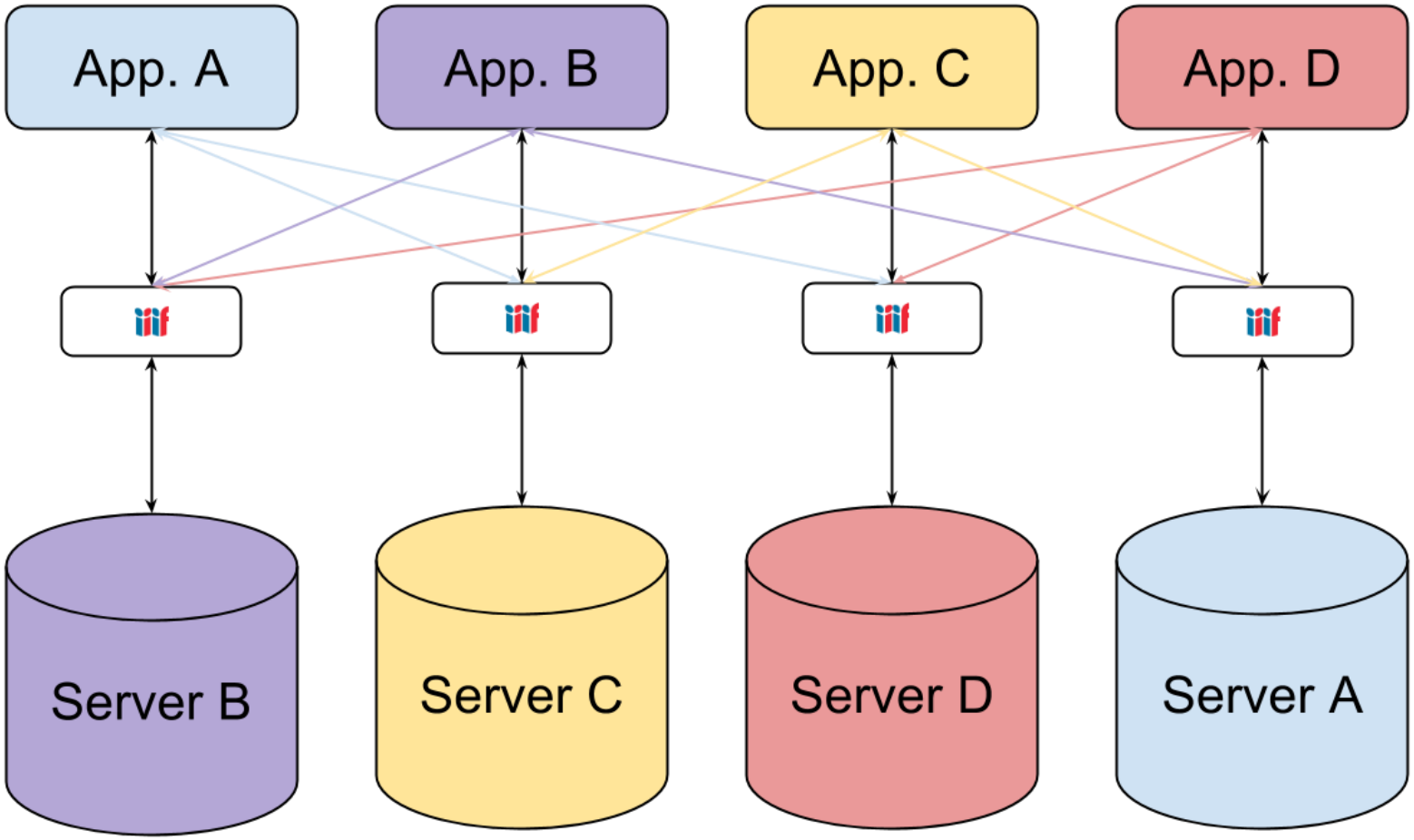
3. Authentication API

A set of workflows for guiding the user through an *existing* access control system.

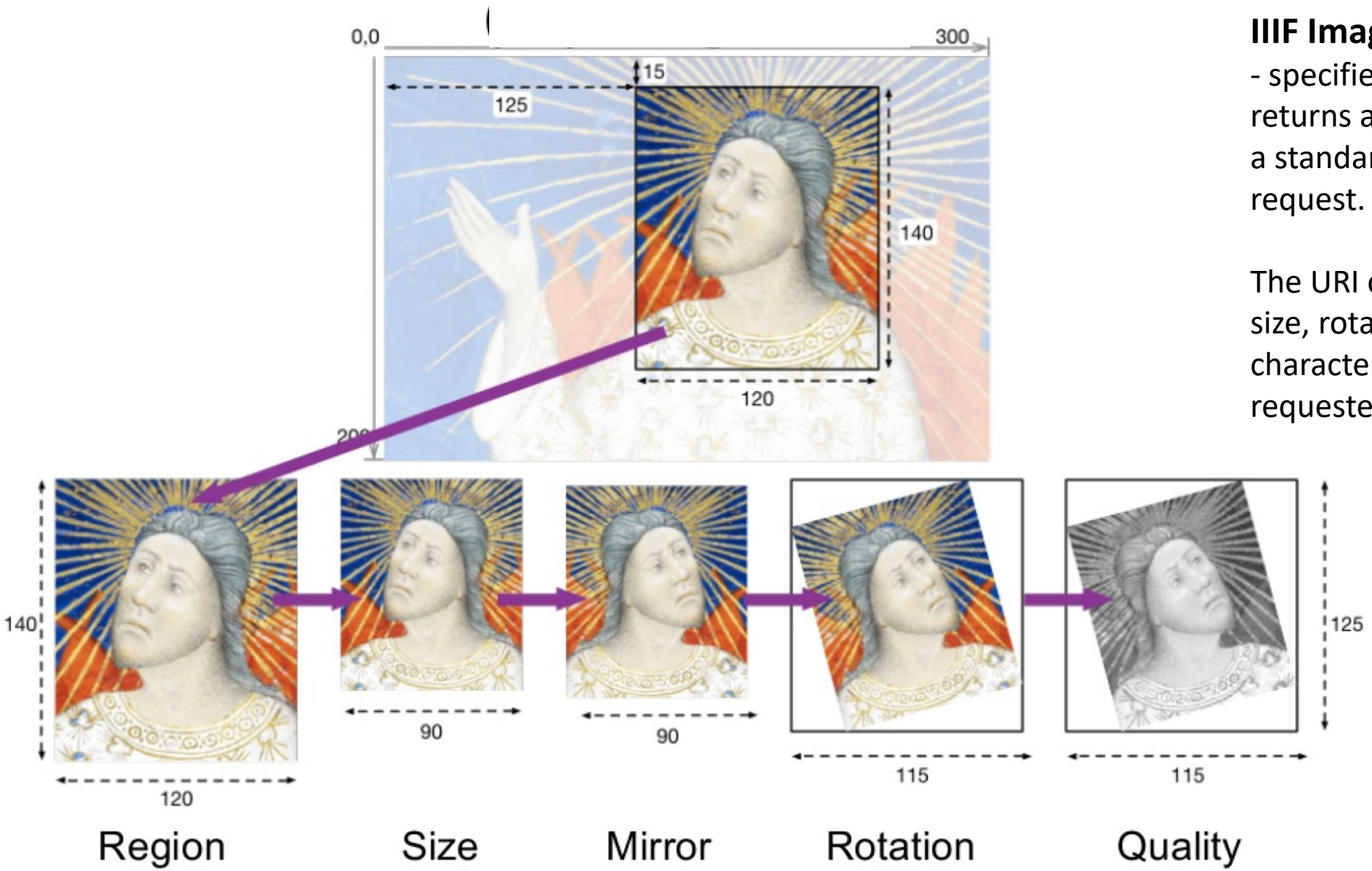
4. Content Search API

Searching annotation content, not metadata.

Facilitate distributed access over standard APIs



Allowing distributed access over standard APIs allows users to reuse and remix content, and supports an ecosystem of applications. Strong IIIF community: national libraries, research institutions, museums, aggregators, projects.

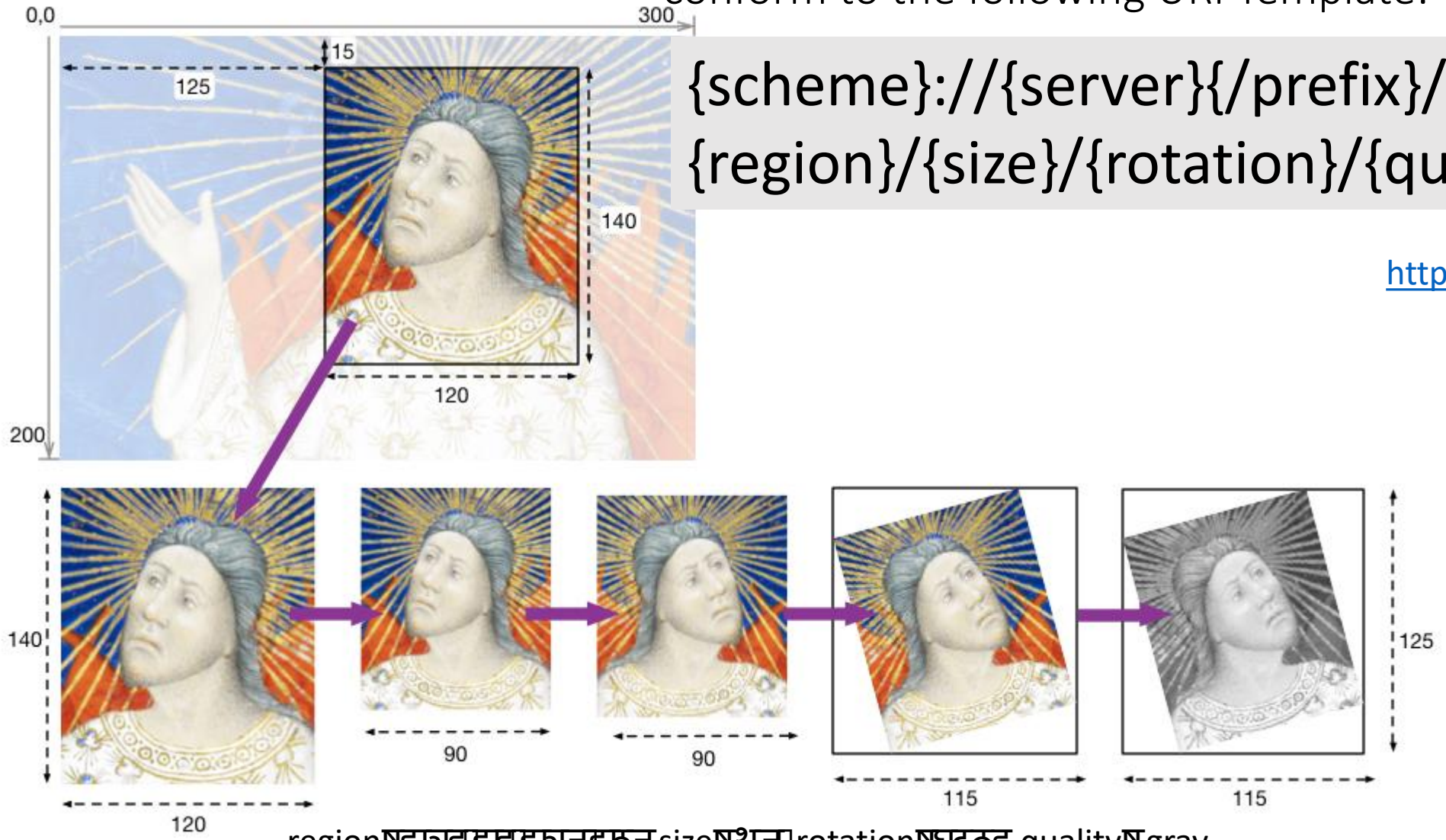


IIIF Image API

- specifies a web service that returns an image in response to a standard HTTP or HTTPS request.

The URI can specify the region, size, rotation, quality characteristics and format of the requested image.

The IIIF Image API URI for requesting an image *must* conform to the following URI Template:



{scheme}://{server}{/prefix}/{identifier}/
{region}/{size}/{rotation}/{quality}.{format}

http://iiif.io/api/image/2.1/

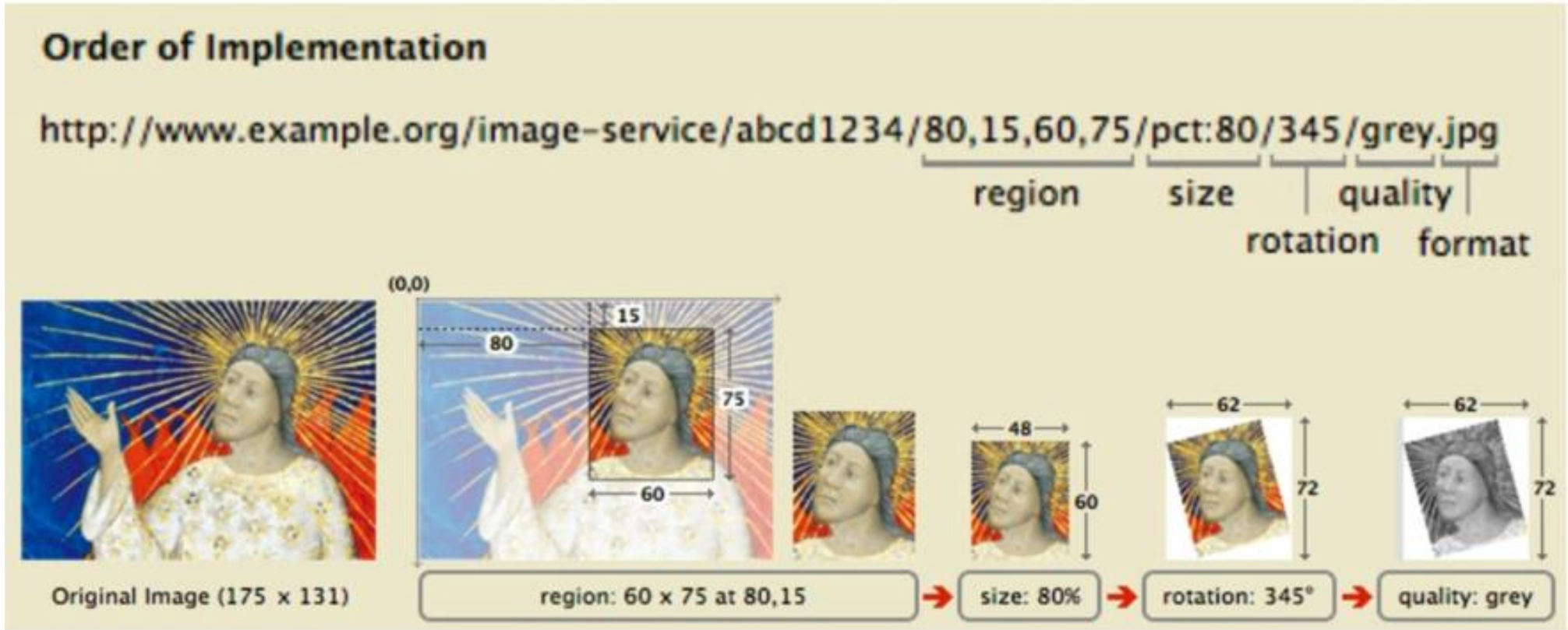
region size rotation quality gray

gray.jpg

Base URL: `{scheme}://{host}{/prefix}/{identifier}`

Image Resource:

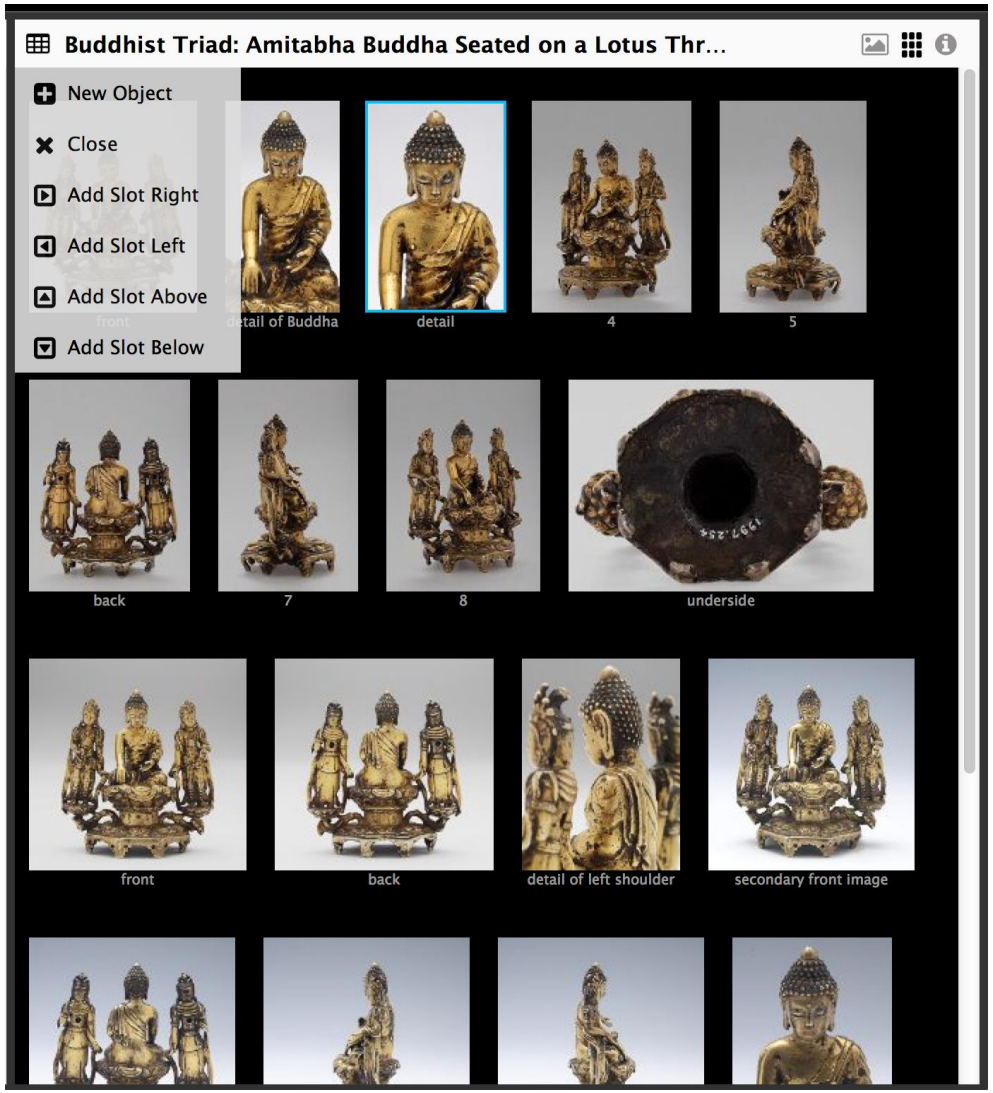
`{base}/{region}/{size}/{rotation}/{quality}.{format}`

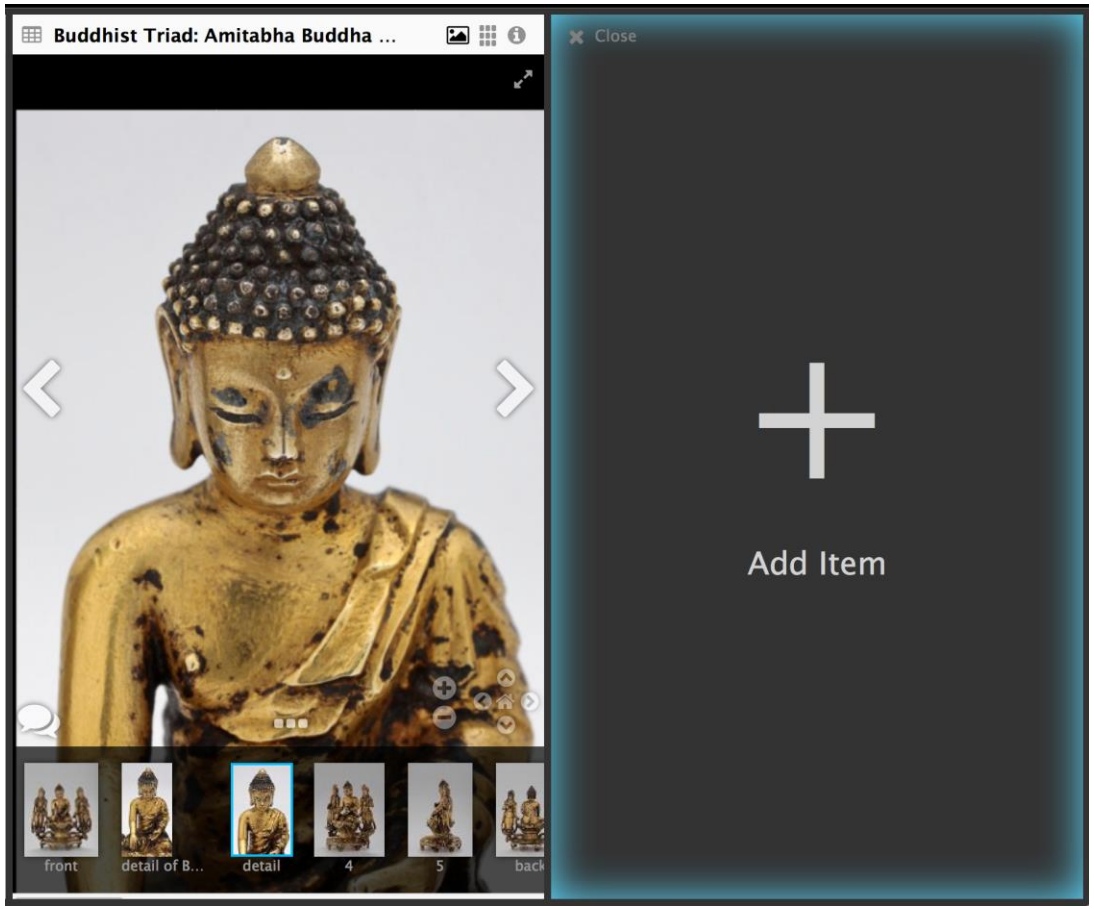


Not just scanned pages: Images of 3D objects

Photo: Jeffrey Emanuel
Thanks to Harvard's Fogg Museum and Rashmi Singhal

http://www.slideshare.net/simeonwarner/2015-01-cornellvrwgiiif





https://github.com/IIIF/mirador

http://projectmirador.org/demo/#aba693db-5073-4bcc-a855-9925fa3168d4

IIIF PRESENTATION API

2.1. Basic Types

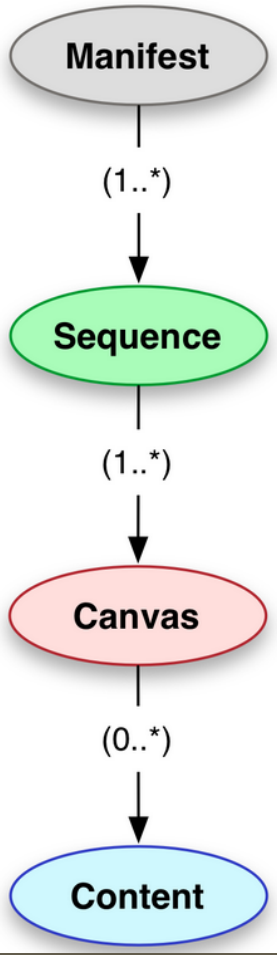
This specification makes use of the following primary resource types:

Manifest
The overall description of the structure and properties of the digital representation of an object. It carries information needed for the viewer to present the digitized content to the user, such as a title and other descriptive information about the object or the intellectual work that it conveys. Each manifest describes how to present a single object such as a book, a photograph, or a statue.

Sequence
The order of the views of the object. Multiple sequences are allowed to cover situations when there are multiple equally valid orders through the content, such as when a manuscript's pages are rebound or archival collections are reordered.

Canvas
A virtual container that represents a page or view and has content resources associated with it or with parts of it. The canvas provides a frame of reference for the layout of the content. The concept of a canvas is borrowed from standards like PDF and HTML, or applications like Photoshop and Powerpoint, where the display starts from a blank canvas and images, text and other resources are "painted" on to it.

Content
Content resources such as images or texts that are associated with a canvas.

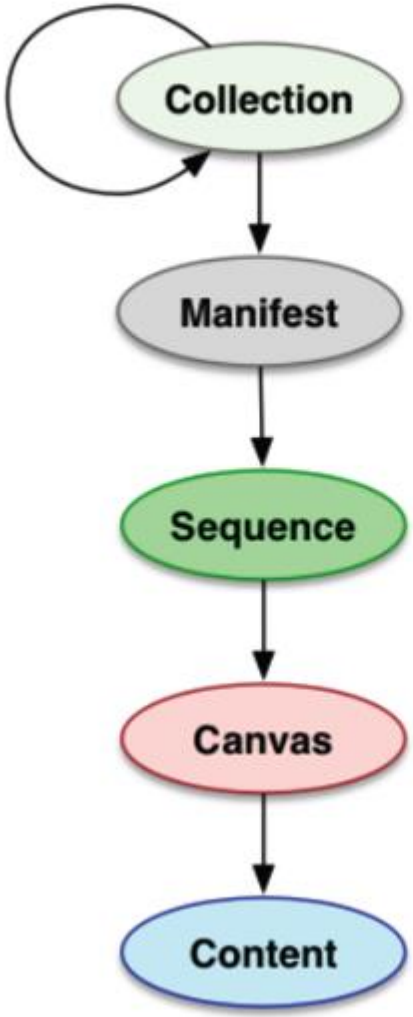


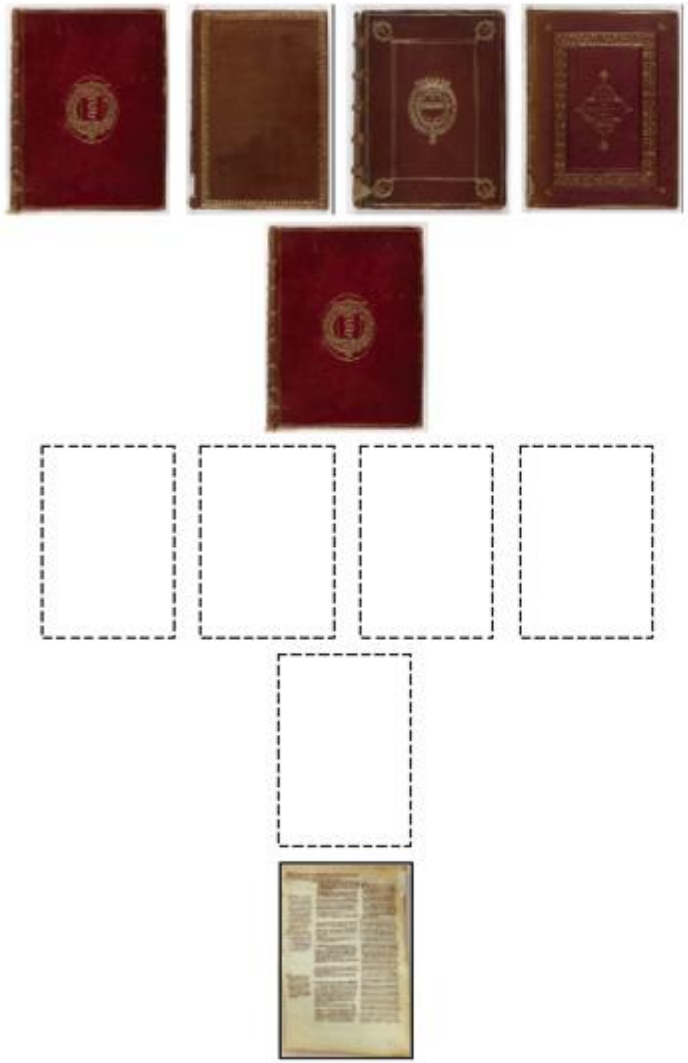
http://iiif.io/api/presentation/2.1/#basic-types

Just enough metadata to drive a remote viewing experience.

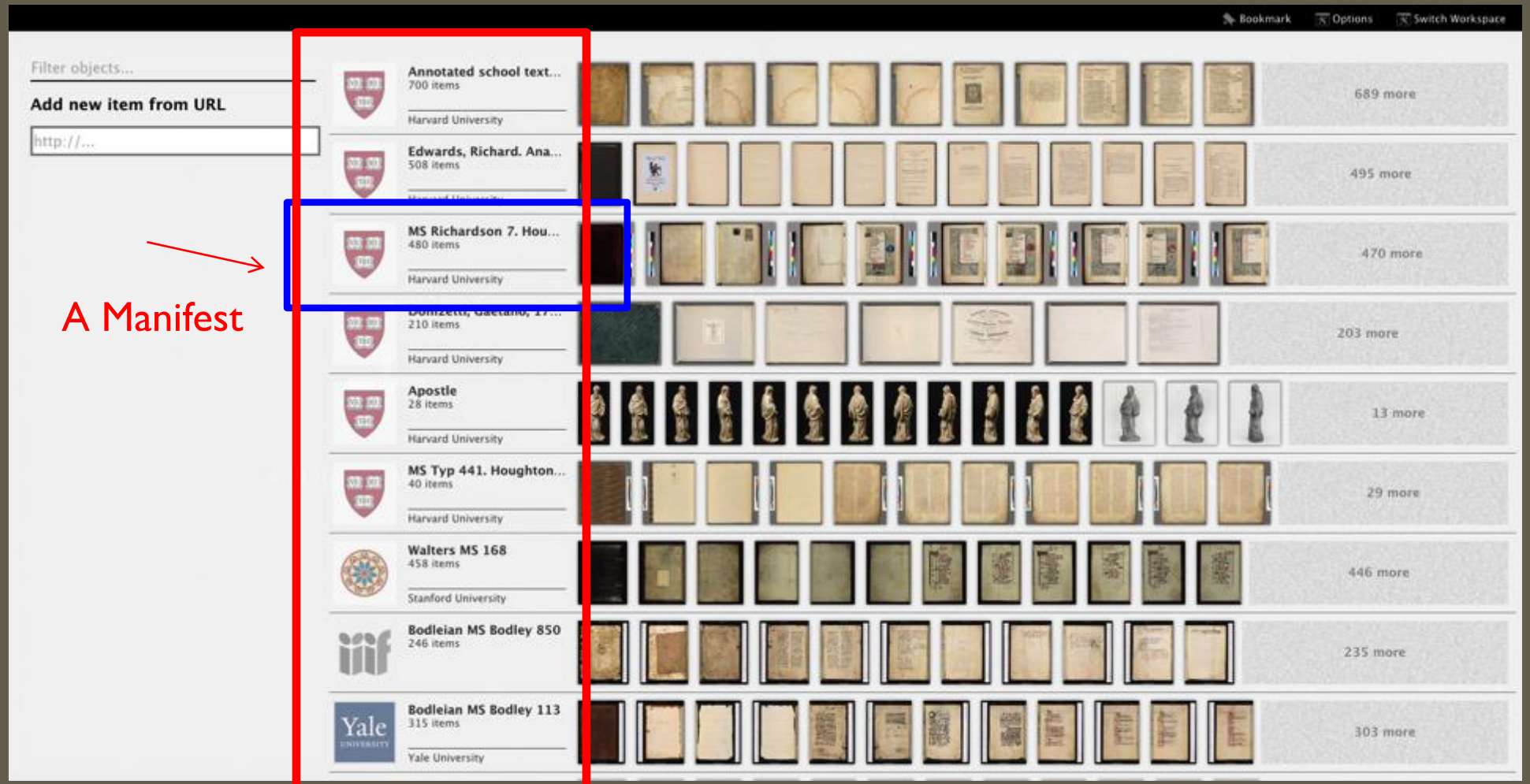
(e.g. sequence, labels, attribution, license)

Structure

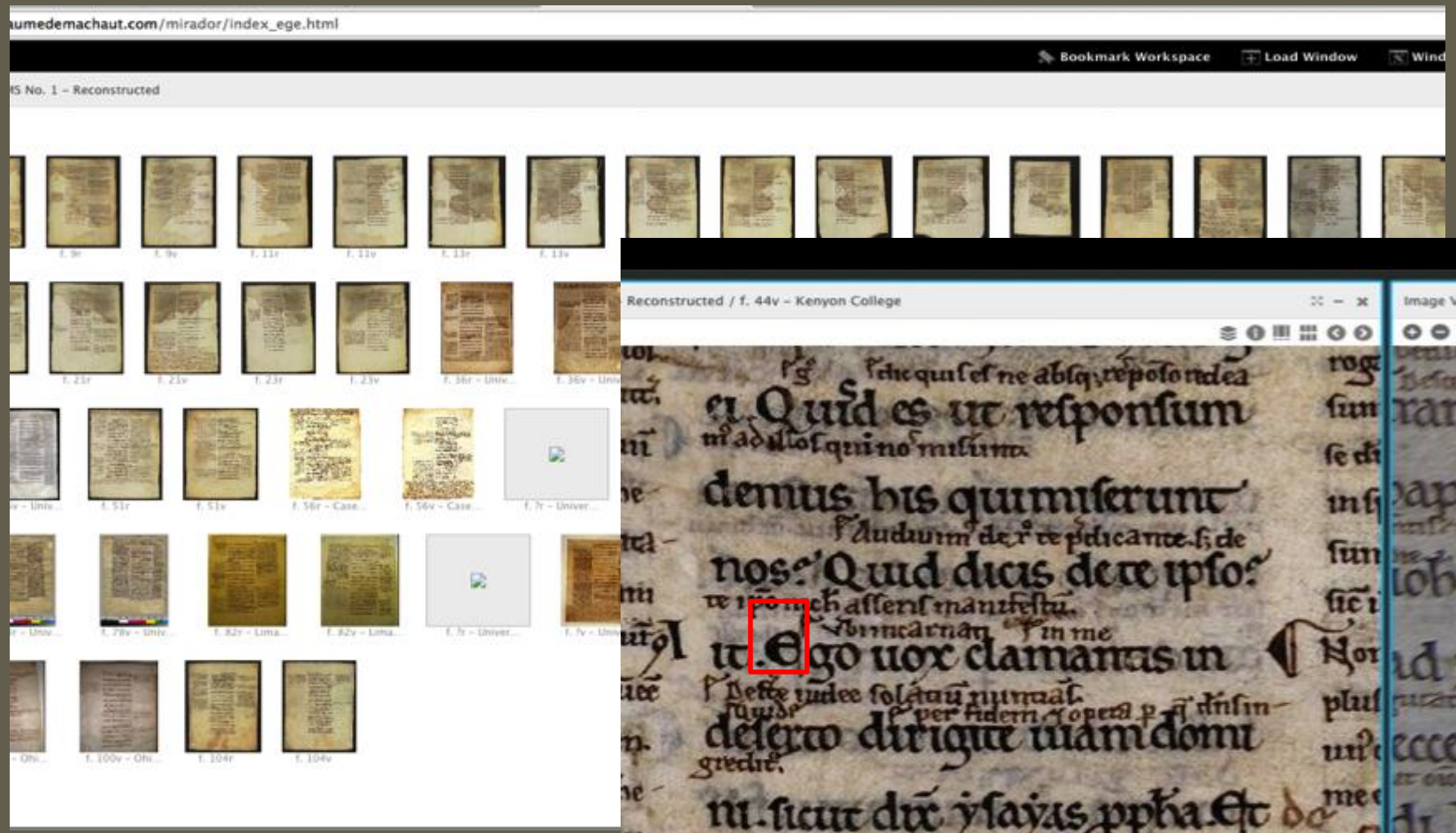




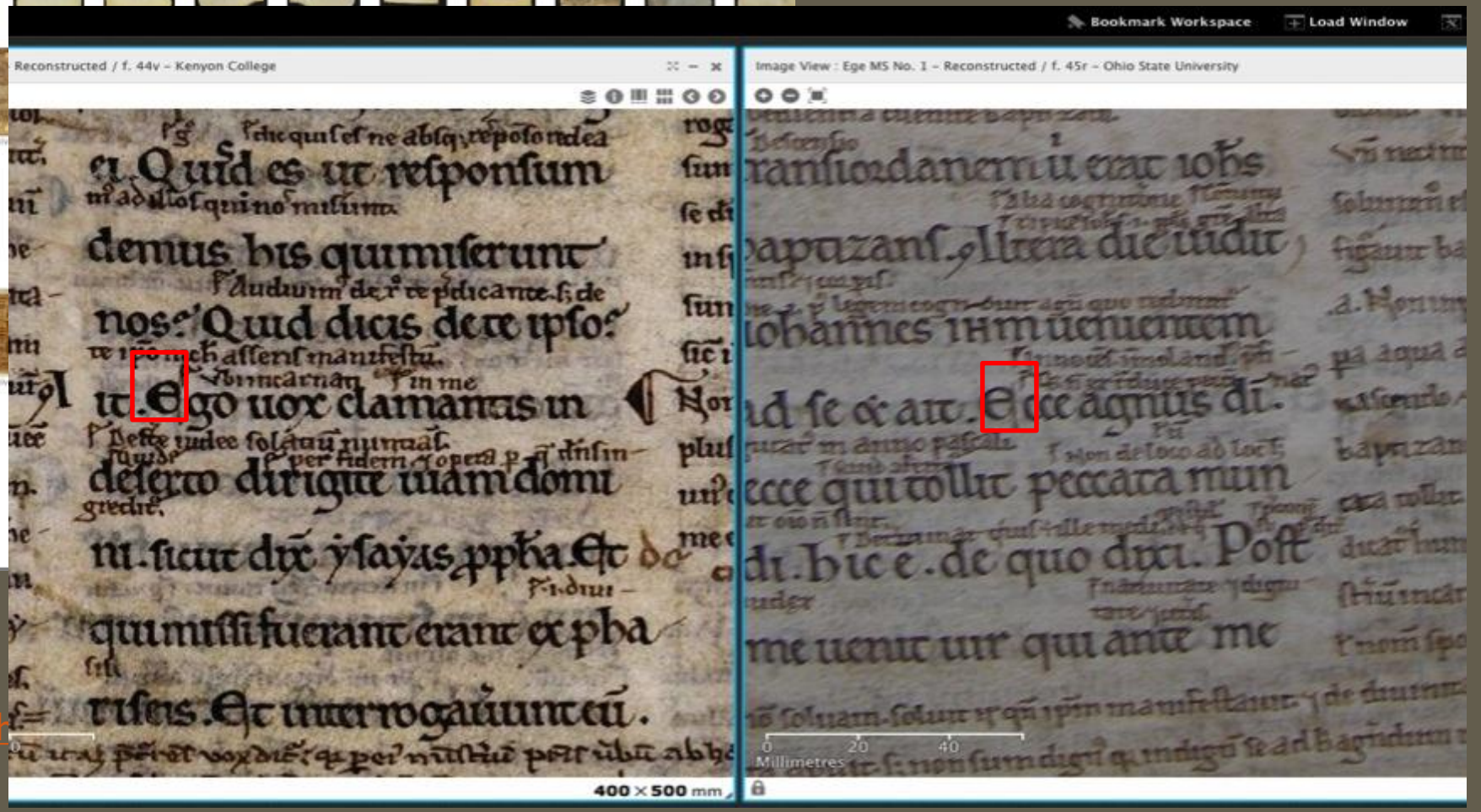
COLLECTIONS, MANIFESTS



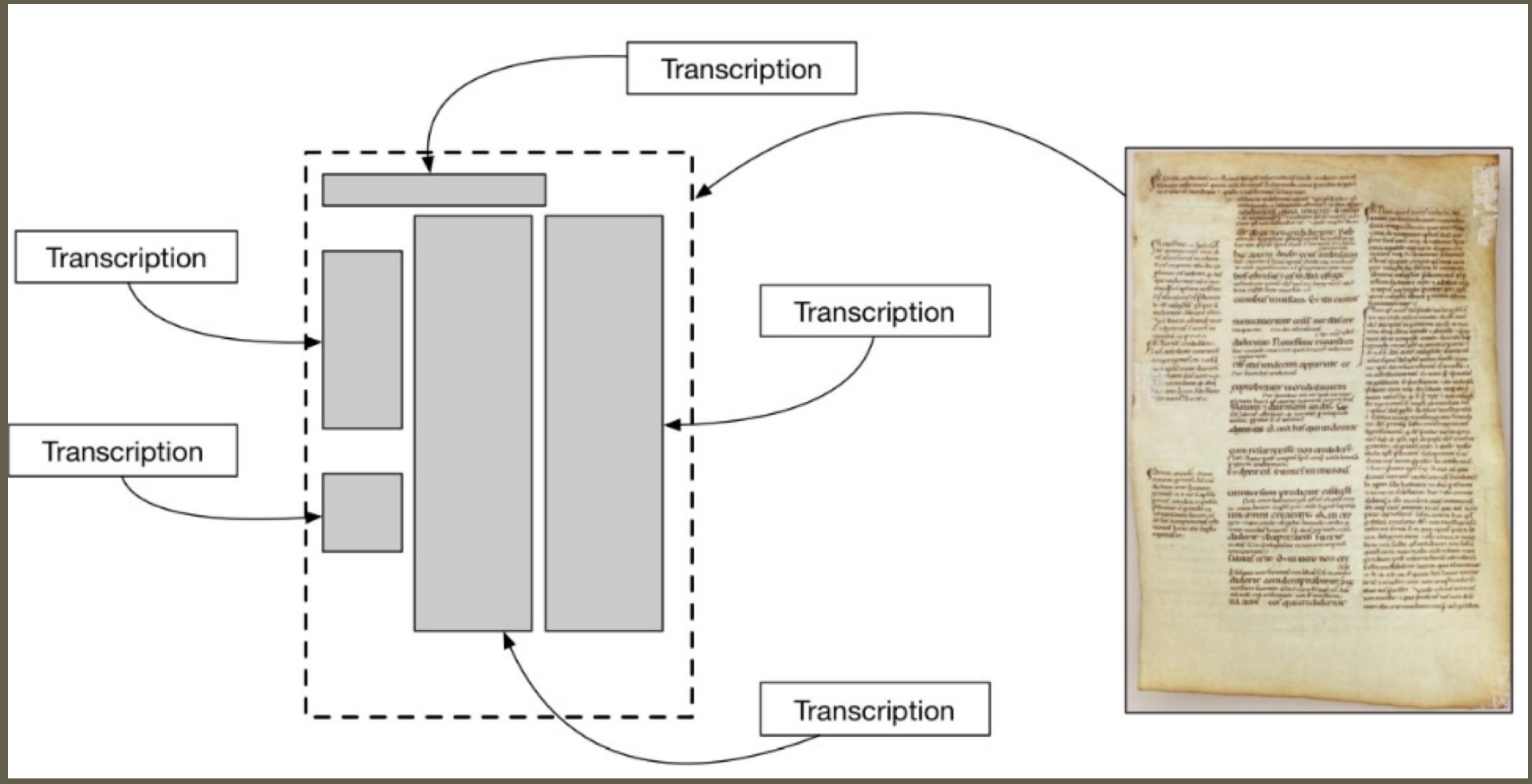
Mirador viewer showing images from 16 institutions, each serving their own images



Zoom to compare features from images provided by different institutions

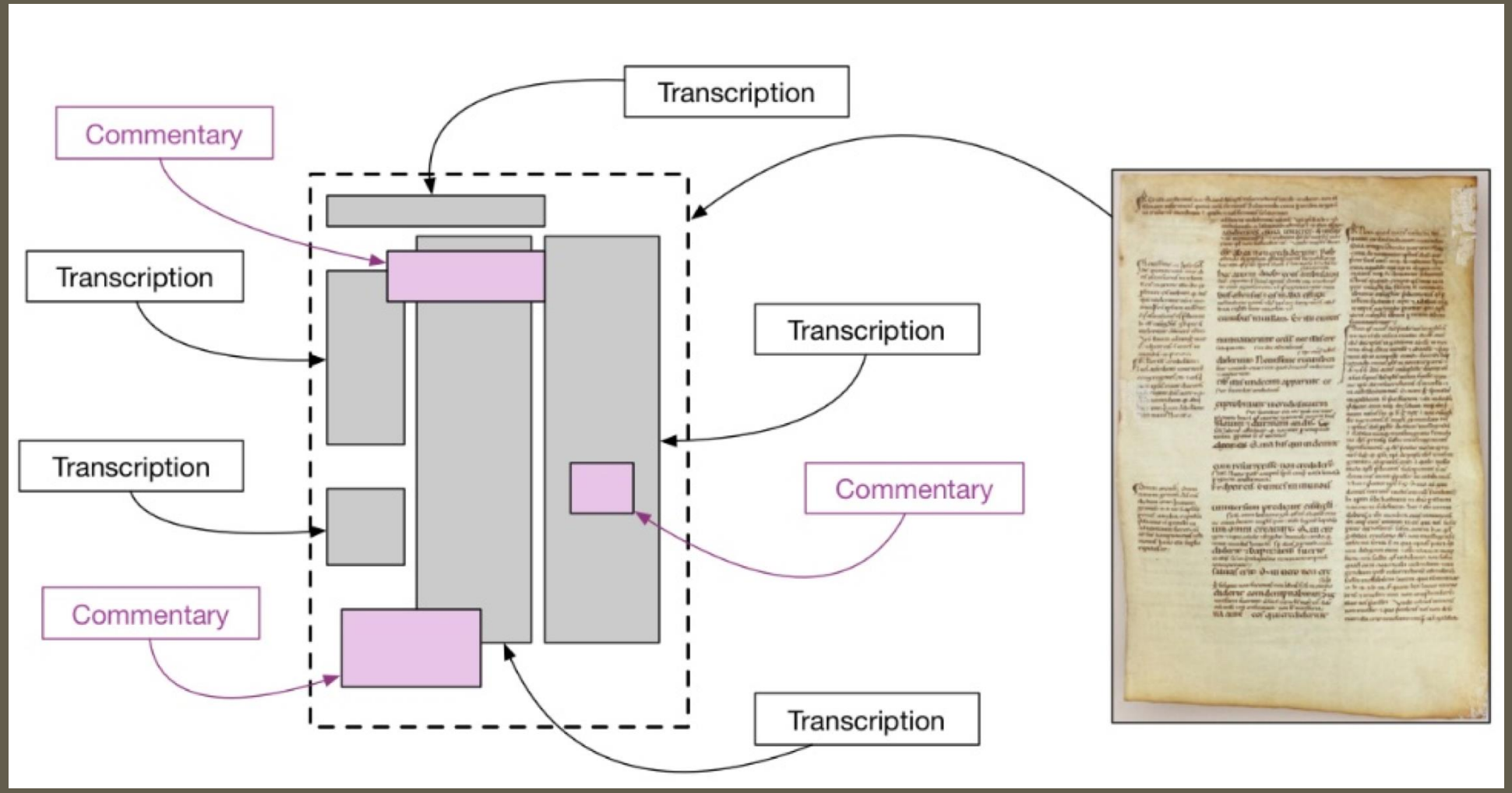


SHARED CANVAS



Each part is identifiable; transcription can be conducted for each part.

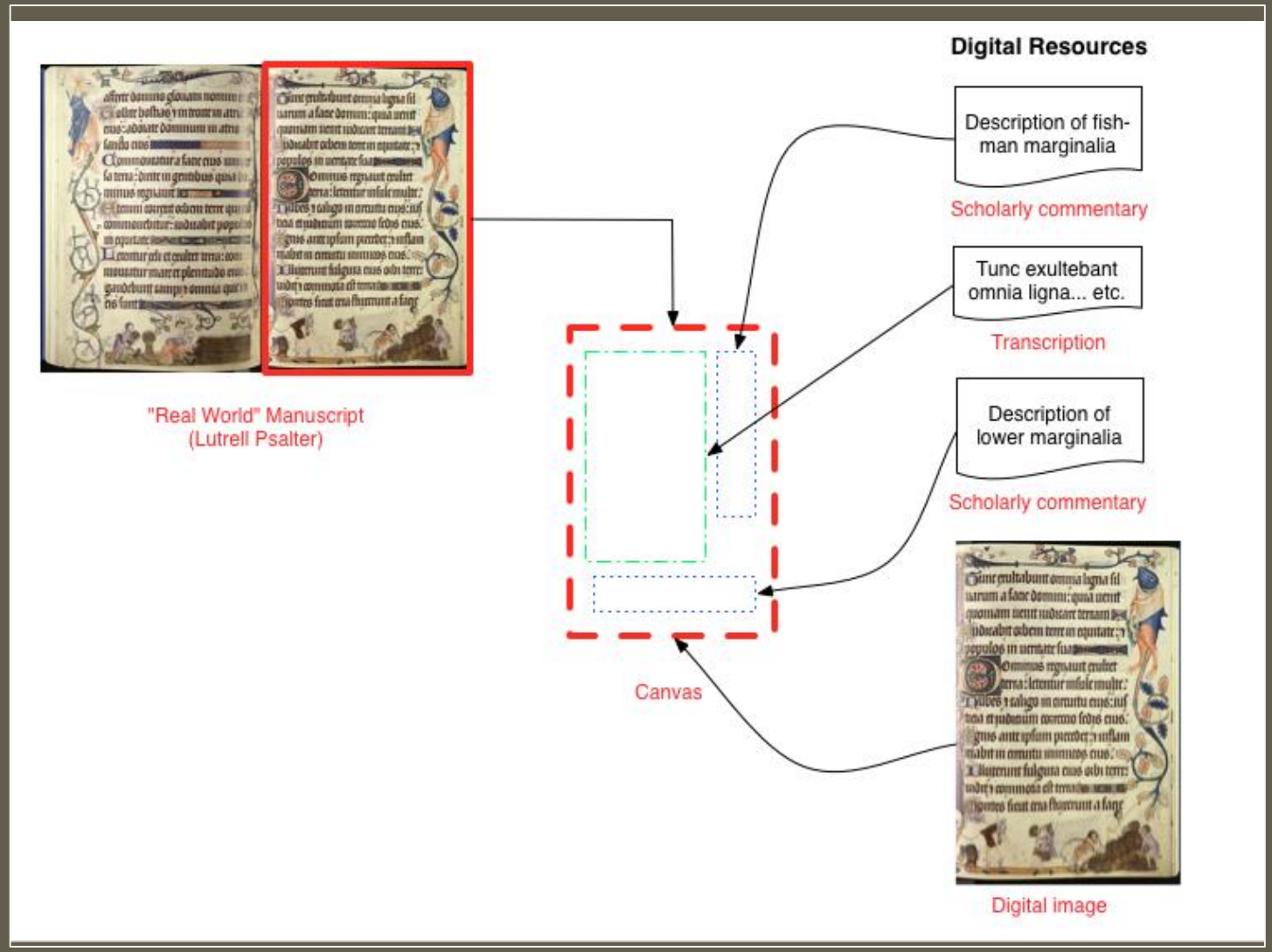
SHARED CANVAS



Each part is identifiable; transcription can be conducted for each part.

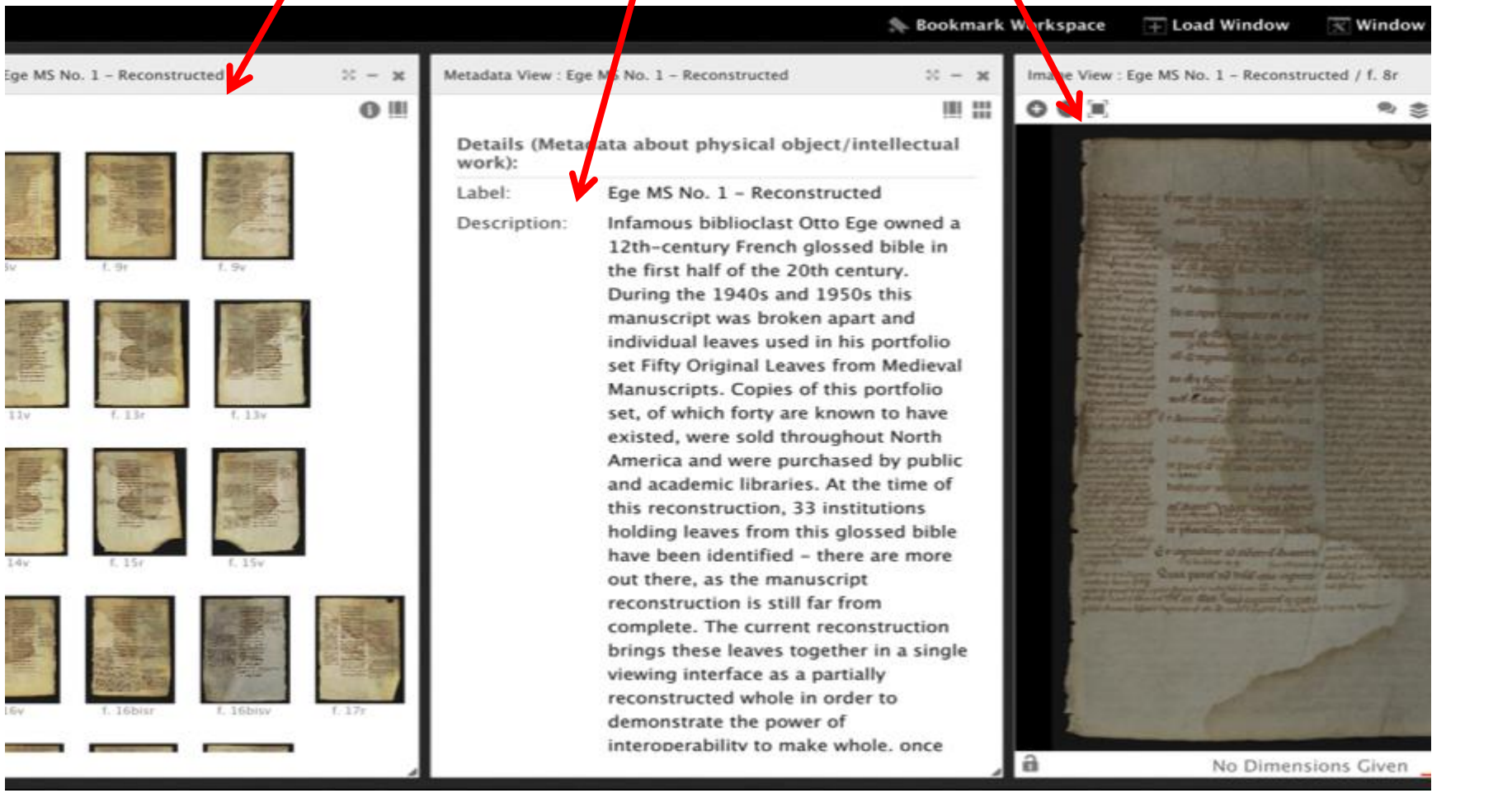
Annotations by experts or other contributors can be added into the canvas.

SHARED CANVAS

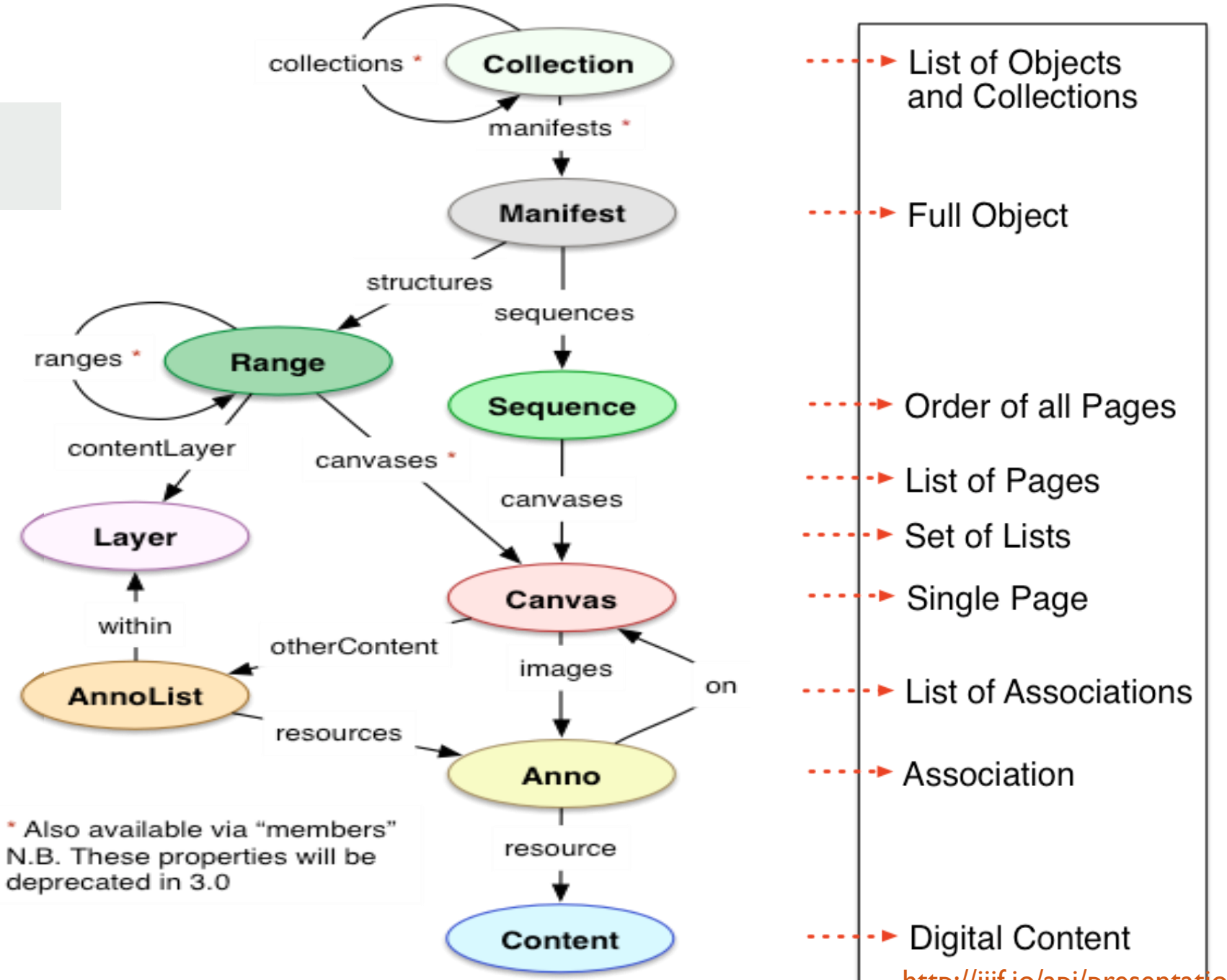


http://www.shared-canvas.org

mix overview images, descriptions, page views, detail views etc.



Shared Canvas -- all resources:



Additional types

http://iiif.io/api/presentation/2.1/#additional-types

http://iiif.io/api/image/2.1/

B. Summary of Metadata Requirements

Field	Meaning
(!)	Required
●	Recommended
○	Optional
⊘	Not Allowed

Descriptive and Rights Properties

	label	metadata	description	thumbnail	a		
Collection	(!)	●	●	●			
Manifest	(!)	●	●	●			
Sequence	○	○	○	○			
Canvas	(!)	○	○	●			
Annotation	○	○	○	○			
AnnotationList	○	○	○	○			
Range	(!)	○	○	○			
Layer	(!)	○	○	○	○	○	○
Image Content	○	○	○	○	○	○	○
Other Content	○	○	○	○	○	○	○

Technical Properties

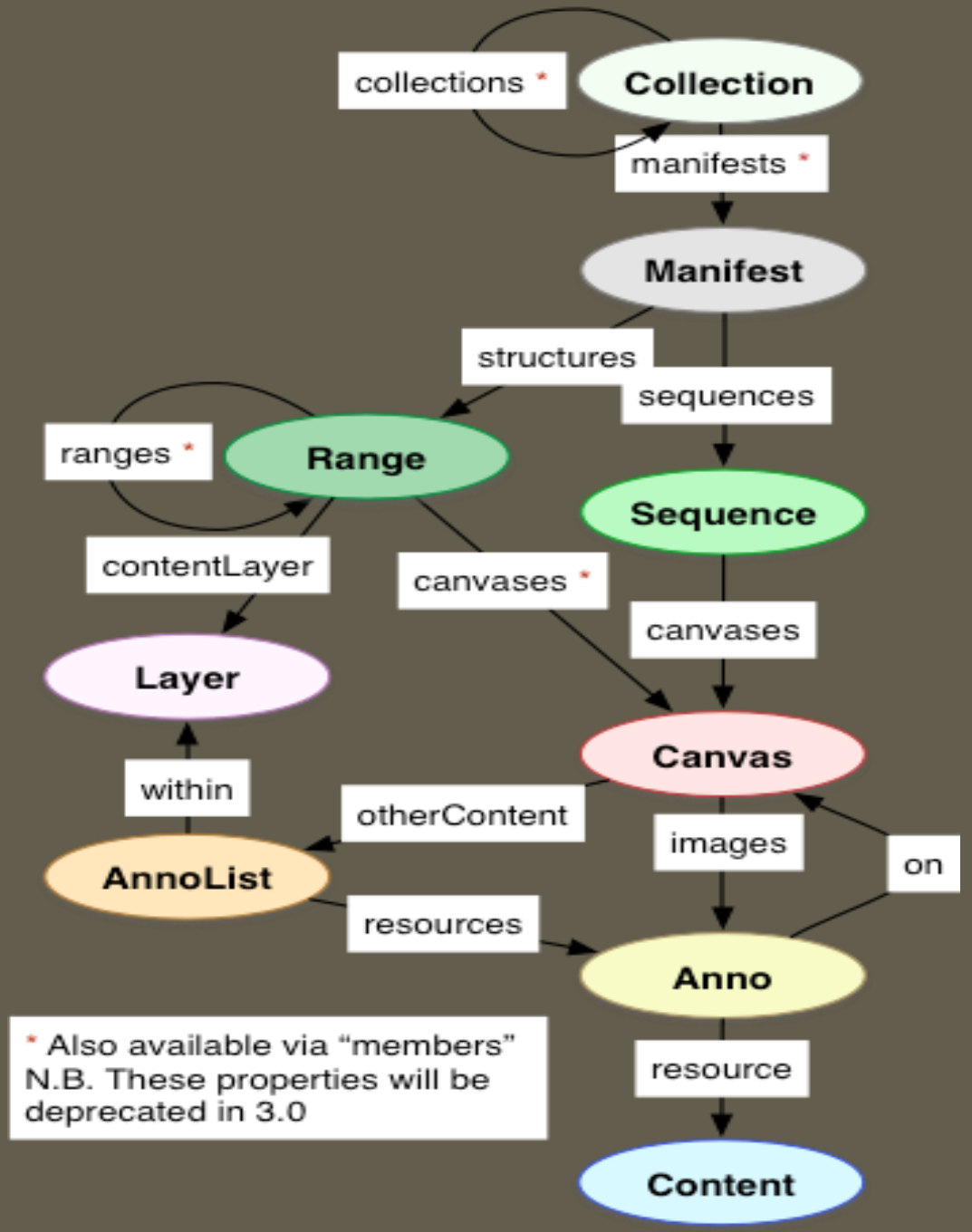
	@id	@type	format	height	width	viewingDirection	viewingHint	navDate
Collection	(!)	(!)	⊘	⊘	⊘	⊘	○	○
Manifest	(!)	(!)	⊘	⊘	⊘	○	○	○
Sequence	○	(!)	⊘	⊘	⊘	○	○	⊘
Canvas	(!)	(!)	⊘	(!)	(!)	⊘	○	⊘
Annotation	●	(!)	⊘	⊘	⊘	⊘	○	⊘
AnnotationList	(!)	(!)	⊘	⊘	⊘	⊘	○	⊘
Range	(!)	(!)	⊘	⊘	⊘	○	○	⊘
Layer	(!)	(!)	⊘	⊘	⊘	○	○	⊘
Image Content	(!)	(!)	○	○	○	⊘	○	⊘
Other Content	(!)	(!)	○	○	○	⊘	○	⊘

See more properties for **linking, paging, structural, protocol behavior**, at the website

Recommended URI Patterns

Resource	URI Pattern
Collection	{scheme}://{host}/{prefix}/collection/{name}
Manifest	{scheme}://{host}/{prefix}/{identifier}/manifest
Sequence	{scheme}://{host}/{prefix}/{identifier}/sequence/{name}
Canvas	{scheme}://{host}/{prefix}/{identifier}/canvas/{name}
Annotation	{scheme}://{host}/{prefix}/{identifier}/annotation/{name}
AnnotationList	{scheme}://{host}/{prefix}/{identifier}/list/{name}
Range	{scheme}://{host}/{prefix}/{identifier}/range/{name}
Layer	{scheme}://{host}/{prefix}/{identifier}/layer/{name}
Content	{scheme}://{host}/{prefix}/{identifier}/res/{name}.{format}

http://iiif.io/api/image/2.1/



Format

The Shared Canvas data model and JSON-LD are leveraged to create an easy-to-implement, JSON-based format.

Example: **Sequence**

6.2. Sequence

Recommended URI pattern:

```
{scheme}://{host}/{prefix}/{identifier}
/sequence/{name}
```

The sequence conveys the ordering of the views of the object. The default sequence (and typically the only sequence) MUST be embedded within the manifest, and MAY also be available from its own URI. The default sequence MAY have a URI to identify it. Any additional sequences MUST be referred to from the manifest, not embedded within it, and thus these additional sequences MUST have an HTTP URI.

The new {name} parameter in the URI structure MUST distinguish it from any other sequences that may be available for the physical object. Typical default names for sequences are “normal” or “basic”. Names SHOULD begin with an alphabetical character.

```
{
  // Metadata about this sequence
  "@context":"http://iiif.io/api/presentation/2/context.json",
  "@id":"http://www.example.org/iiif/book1/sequence/normal",
  "@type":"sc:Sequence",
  "label":"Current Page Order",

  "viewingDirection":"left-to-right",
  "viewingHint":"paged",
  "startCanvas": "http://www.example.org/iiif/book1/canvas/p2",

  // The order of the canvases
  "canvases": [
    {
      "@id":"http://www.example.org/iiif/book1/canvas/p1",
      "@type":"sc:Canvas",
      "label":"p. 1"
      // ...
      ]
    },
    {
      "@id":"http://www.example.org/iiif/book1/canvas/p2",
      "@type":"sc:Canvas",
      "label":"p. 2"
      // ...
    },
    {
      "@id":"http://www.example.org/iiif/book1/canvas/p3",
      "@type":"sc:Canvas",
      "label":"p. 3"
      // ...
    }
  ]
}
```

IIIF Authentication API

Table of Contents

Property	Required?	Description
`@context`	REQUIRED	The context API. The valu `/1/context.`

Pattern	Profile URI	Description
Login	`http://iiif.io/api/auth /1/login`	The user will b with a UI provi

An example service description for the Login interaction pattern:

```
{
  // ...
  "service" : {
    "@context": "http://iiif.io/api/auth/1/context.json",
    "@id": "https://authentication.example.org/login",
    "profile": "http://iiif.io/api/auth/1/login",
    "label": "Login to Example Institution",
    "header": "Please Log In",
    "description": "Example Institution requires that you
account to view this content.",
    "confirmLabel": "Login",
    "failureHeader": "Authentication Failed",
    "failureDescription": "<a href=\"http://example.org/po
    "service": [
      // Access token and Logout services ...
    ]
  }
}
```

IIIF Search API

Table of Contents

Parameter	Definition
q	A space s bodies) or separated
motivation	A space s search if a
date	A space s any of the DDThh:mm: based forr
user	A space s matches t

Motivation
painting
non-painting
commenting
describing
tagging
linking

3.2.2. Example Request

This example request:

```
http://example.org/services/manifest/search?q=bird&motivation=painting
```

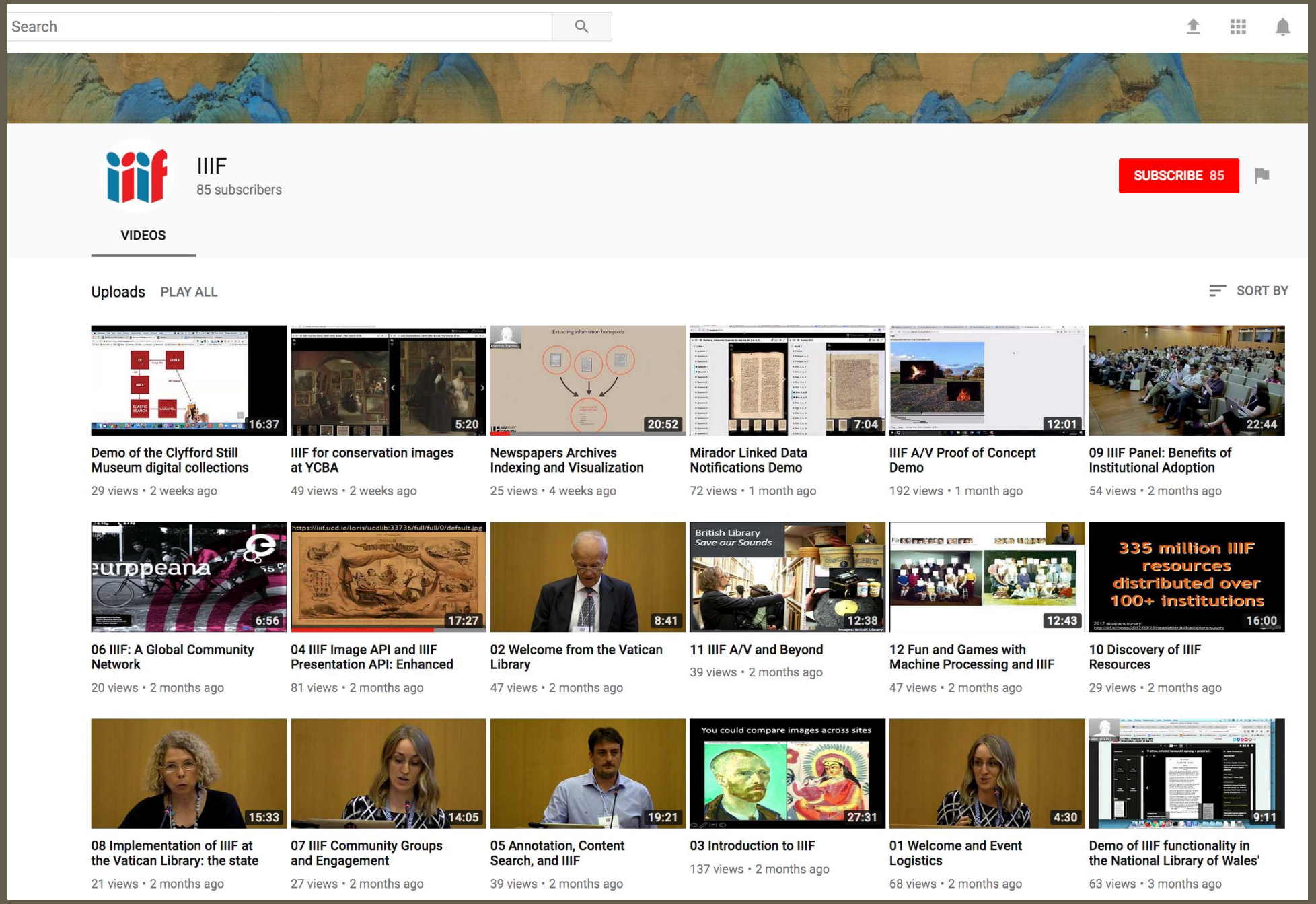
Would search for annotations with the word “bird” in their textual content, and have the motivation of `painting`. It would search annotations within the resource the service was associated with.

Related:

Web Annotation Data Model

W3C Recommendation 23 February 2017

Learn more: https://www.youtube.com/channel/UCIcQIkLdYra7ZnOmMJnC5OA/videos



Questions?

Standards and Best Practices related to the Publication, Exchange, and Usage of Open Data

- *Data On The Web*
- *Image-based Resources*

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ASIS&T 2017